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January 26, 2018

Submitted Via Electronic Mail
To nwr-stormwater@deq.state.or.us

Stormwater Permitting Office
ODEQ Northwest Region Office
700 NE Multnomah St Suite 600
Portland, OR 97232

Re: *Northwest Natural Gas Company (LNG Plant)*
ODEQ File No. 62231
Application for new NPDES permit

Dear Sir or Madam:

Exxon Mobil Corporation ("ExxonMobil") appreciates the opportunity to submit comments on the application for a new NPDES permit submitted by Northwest Natural Gas Company for riverfront property located 6900 St. Helens Road, Portland, Oregon ("the Gasco Site") on December 20, 2017. We understand that NW Natural is seeking to be covered by the general permit for storm water, dated August 2017.

1. Absence of a Prior Permit.

We understand that there are two active outfalls at the Gasco Site. (See Anchor site plan attached as Exhibit A.) A portion of the discharge from the Site reaches the Willamette River through Outfall 001 including the effluent from the on-site groundwater treatment plant discharge. The Outfall 001 discharge has an existing permit. However, the portion of the Gasco Site that discharges to Outfall 107 has apparently never had an NPDES permit, despite the fact that significant contamination has long been known to be discharged from this outfall. For example, during the remedial investigation conducted by the Lower Willamette Group, the outfall in question – 107 – was sampled on multiple occasions in 2007-08 and again in 2009-10. All the results showed that the concentrations of PAH in stormwater solids being discharged at Outfall 107 were elevated and significantly exceeded the sediment cleanup standards later identified in the Record of Decision for the Portland Harbor Site.¹

¹ See presentation attached as Exhibit B, by Jonathan Nuwer and Jeff Johnson, NewFields, DNAPL and Stormwater Source Control Concerns, NW Natural Facility, presented in meeting on November 2, 2017.

It is well known that the Gasco Site has been a significant discharger to the Willamette River for decades and *continues to be* a significant contributor to sediment contamination in the Willamette River. On June 14, ODEQ Director Whitman wrote a letter to EPA Administrator Pruitt identifying the Gasco Site as one of the five sites that needed to initiate early remedial design. In prior correspondence, Matt McClincy indicated that progress has been made in addressing the ongoing source at the Gasco Site since the RI data were obtained in the 1980s and referred us to ODEQ's more recent Upland Summary Source Control Report, which lists the Gasco Site as uncontrolled. See <http://www.oregon.gov/deq/FilterDocs/ph-scSumRepUp>

Since that time, ExxonMobil and others in the River Mile 4-7 Group have met with ODEQ and presented information and forensic chemistry data explaining why it appears that the site remains uncontrolled, and expressing concern about future recontamination risks (see Exhibit B). We have asked to review any data or test results that support ODEQ's view that the situation has improved since the RI data were obtained, which showed that the Gasco Site had the highest levels of PAH contamination coming off the property of any location in the entire Superfund Site. To date, we have not been advised of or seen any information that would indicate improvement or document changed conditions. The permit application file does not include any recent information on discharge conditions, stormwater loading, or other data relevant to the issue of the current discharge.

ExxonMobil has previously provided comments on the ongoing source that appears to be occurring at the Gasco site and has suggested to ODEQ that loading studies are needed in order to evaluate permit limits and ongoing source issues for this property and met with both EPA Region 10 and ODEQ representatives to discuss our concerns in November 2017. See presentation (Exhibit B). ExxonMobil requests that its prior comments be incorporated herein by reference and that the suggested studies on loading be conducted prior to setting NPDES permit limits.

2. A permit was required for the Gasco Site discharge at Outfall 107 before the current regulatory change regarding the Oregon general storm water permit.

It appears to be the position of the permit applicant and the agency that no permit was required for discharge of contaminated stormwater at Outfall 107 until the regulations were revised in August 2017. This is incorrect. Because the Gasco Site was a known discharge point entering the river, the Clean Water Act required a permit. It is concerning that one of the largest contributors to the Superfund Site contamination has been discharging uncontrolled material with no permit for decades.

Historical operations at the NW Natural plant included the operation of a manufactured gas plant as well as refining and chemical manufacturing. Products made onsite included toluol, xylol and solvent naphtha. Refining activities included the production of motor fuel, creosote, and benzene and tar distillates. (See Siltronic comments for more detail on historical production.)

Because contamination from these industrial activities was present on the site and because stormwater was exposed to historic contaminants from these activities, an NPDES permit was required but was not issued.

3. An individual permit is required, not coverage by the general permit.

It appears the Gasco Site is not eligible for coverage by the general permit. In order to obtain coverage under the general permit a facility must meet the following three criteria:

- i. Prevent all pollutants for which the waterbody is impaired from exposure to stormwater and document in the Stormwater Pollution Control Plan (SWPCP) procedures taken to prevent exposure on-site; or
- ii. Document in SWPCP that the pollutants for which the waterbody is impaired are not present at the site; or
- iii. Provide data and other technical information that demonstrates that the discharge is not expected to cause or contribute to an exceedance of the water quality standard for which the waterbody is impaired at the point of discharge to the waterbody if the pollutants for which the waterbody is impaired are likely to be present at the site and DEQ has not issued a TMDL for the pollutant(s).

If the discharger cannot meet the above conditions, the discharge must cease or the discharger must obtain an individual permit.

NW Natural's permit application on its face appears to disqualify NW Natural from all of the three criteria. Most importantly, the application does not demonstrate that the discharge will not cause or contribute to an exceedance of the water quality standard for which the water body is impaired that are likely to be present at the Gasco Site. The levels of PAHs associated with the stormwater solids discharged from Outfall 107 are hundreds of times the sediment cleanup level established by US EPA for the ROD for the Portland Harbor Superfund Site.. An individual permit is needed for this ongoing discharge.

4. The proposed permit levels pose a risk of ongoing contamination and future recontamination to the river.

ExxonMobil is concerned that some of the limits in the proposed permit exceed levels that the US EPA has set forth in the ROD as cleanup goals for the Portland Harbor Superfund Site. Although we understand the issue of loading (vs. one-time point sampling), we have found no analysis of contaminant loading that would justify setting the discharge levels above the USEPA ROD cleanup goals. Also, we suggest that all contaminants of concern listed in the ROD as requiring cleanup should be proven to be absent from Outfall 107 prior to establishing the monitoring requirements and discharge limits for this permit.

Without an understanding of loading of contaminants, under proposed permit limits, NW Natural could re-contaminate areas of the Willamette River after cleanups that have occurred or may soon occur. The loading studies that should be required were outlined in the comments on the ROD that were previously submitted to US EPA and ODEQ and discussed in our in-person meeting on November 2, 2017. We reiterate our request that these studies be conducted prior to settling final limits for this NPDES permit, and further request that they be conducted for all COCs and not just PAHs.

CONCLUSION

ExxonMobil is concerned by the absence of a stormwater permit for Outfall 107, despite information indicating the need for one over years, and information showing that the discharge has been shown at times to greatly exceed levels that EPA has established as cleanup goals in the river. We believe the circumstances require an individual permit for Outfall 107, and request that any discharge limits or monitoring requirements be based on current data and loading information that clearly indicate whether the discharge would exceed the cleanup standards in the ROD or risk recontamination to any remediated properties at the Superfund Site.

Very truly yours,

A handwritten signature in blue ink that reads "Deborah A. Edwards / smuta". The signature is fluid and cursive, with a long horizontal flourish extending to the right.

Deborah A. Edwards
Global Sediment Technical Lead
ExxonMobil Environmental Services, Inc.

Cc: [all via email]

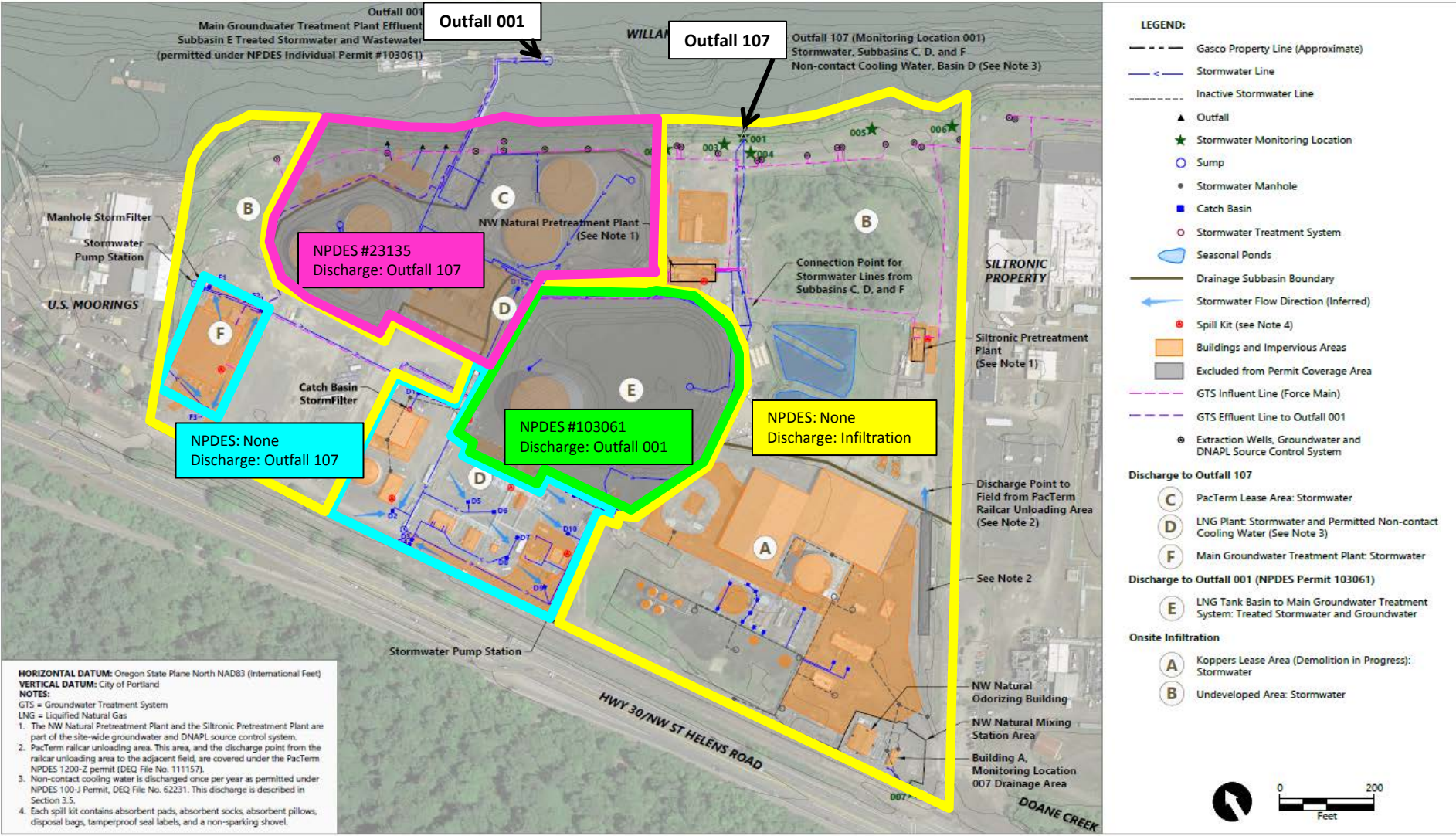
Sean Sheldrake, EPA [sheldrake.sean@epa.gov]
Lori Cora, EPA [cora.lori@epa.gov]
Dana Bayuk, DEQ [dana.bayuk@state.or.us]
Matt McClincy, DEQ [matt.mcclincy@state.or.us]
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Julie Weis, Trustee Council [weis@hk-law.com]
Nanci Klinger, City of Portland [Nanci.klinger@portlandoregon.gov]
Myron Burr [Myron.burr@siltronic.com]
Ilene Munk [imunk@foleymansfield.com]

Attachments

Exhibit A: Figure by Anchor QEA
Exhibit B: Presentation slides by Jonathan Nuwer and Jeff Johnson, NewFields, DNAPL and Stormwater Source Control Concerns, NW Natural Facility, presented in meeting on November 2, 2017.

EXHIBIT A

Existing NPDES Permits



Publish Date: 2017/12/01 1:56 PM | User: dholmer
 Filepath: K:\Projects\0029-NW Natural Gas Co\Gasco Site Remedy\Site Wide FS\Stormwater Pollution Control Plan\0029-RP-002 (Site Plan).dwg 2-1



**Figure 2-1
Site Plan**

Stormwater Pollution Control Plan
 NW Natural Gasco Property

EXHIBIT B

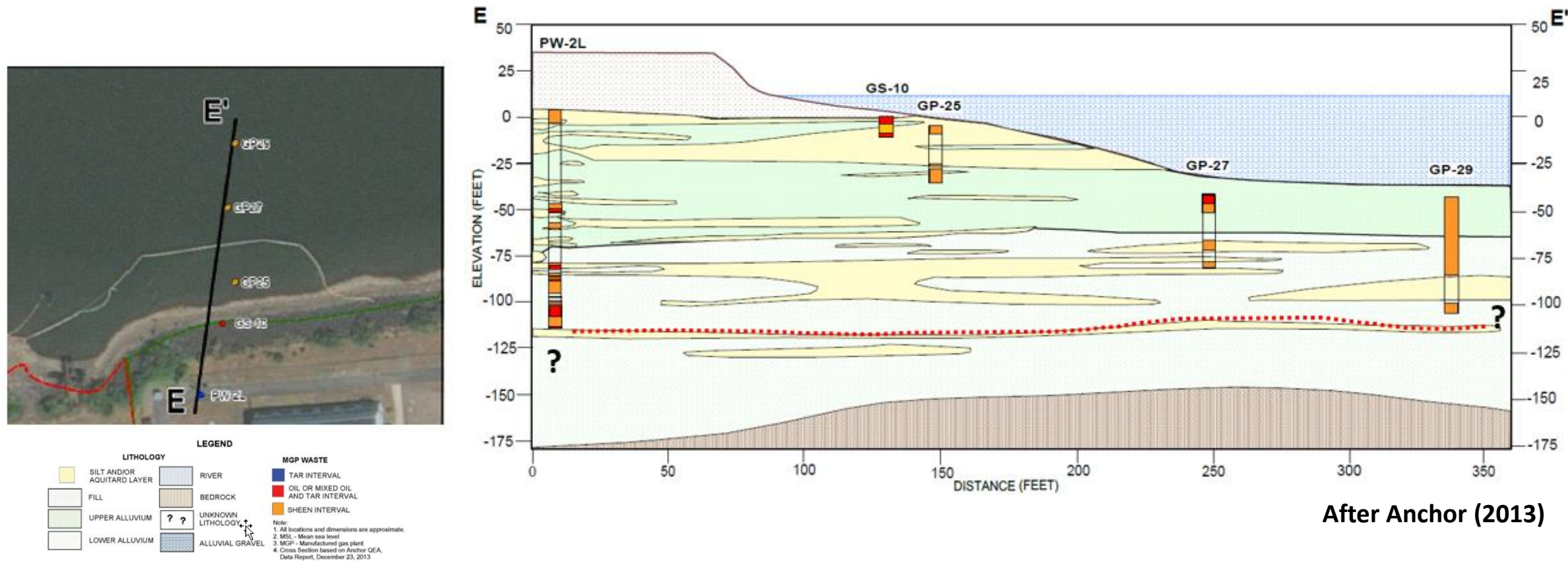


 **NewFields**

DNAPL and Stormwater Source Control Concerns, NW Natural Facility

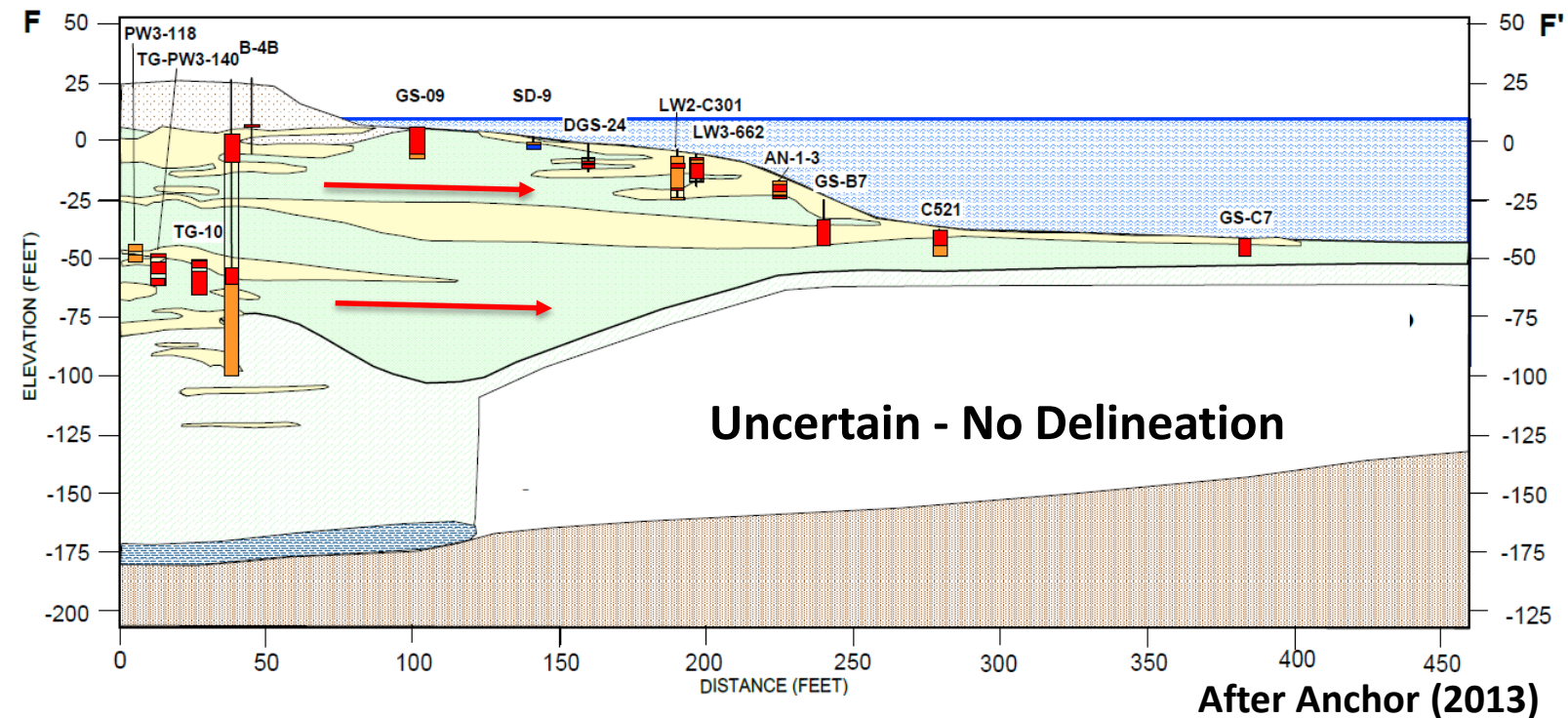
Evaluation of Off-Site DNAPL Migration

Off-Site DNAPL

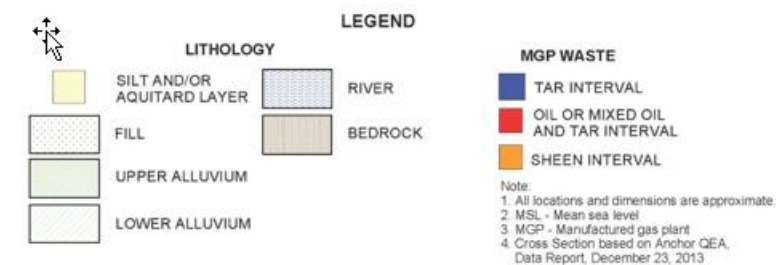


- DNAPL is present within the channel sediments of the Willamette River
- DNAPL present *over 300 feet* off-shore
- DNAPL occurs at depth beneath sediment interface
- Extent of off-site DNAPL has not been delineated

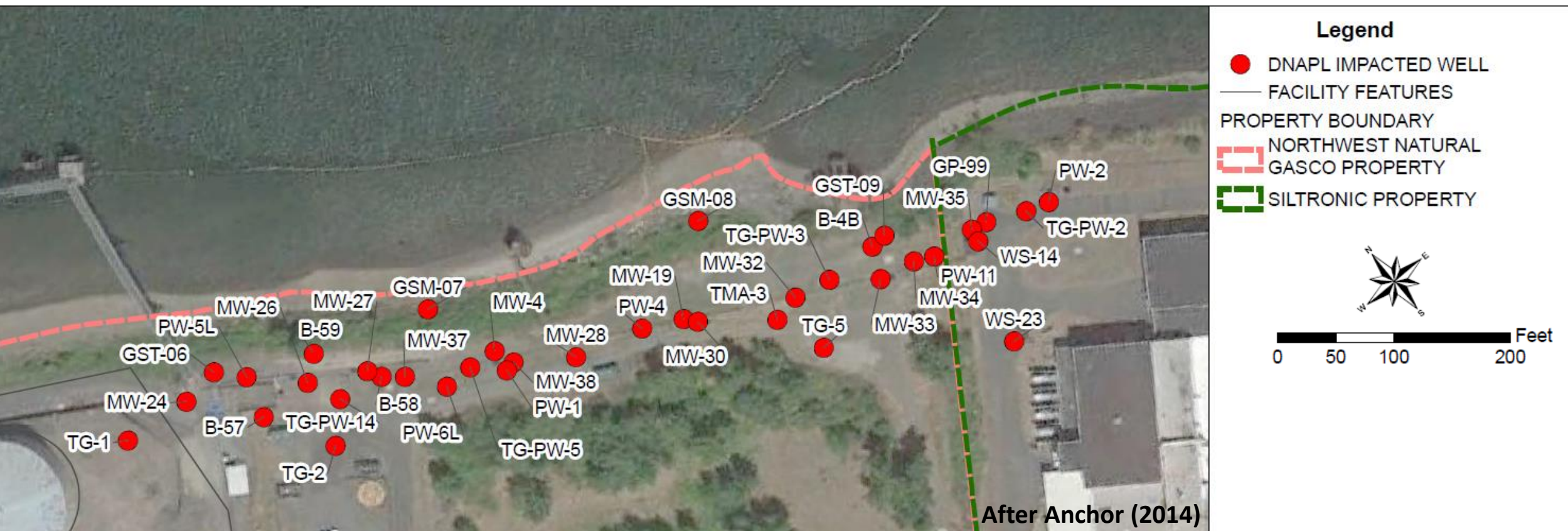
Off-Site DNAPL



- Cores from off-shore sediment contain mobile DNAPL
- DNAPL migration results from:
 - Abundant source material
 - Northeast dipping strata
 - Absence of containment

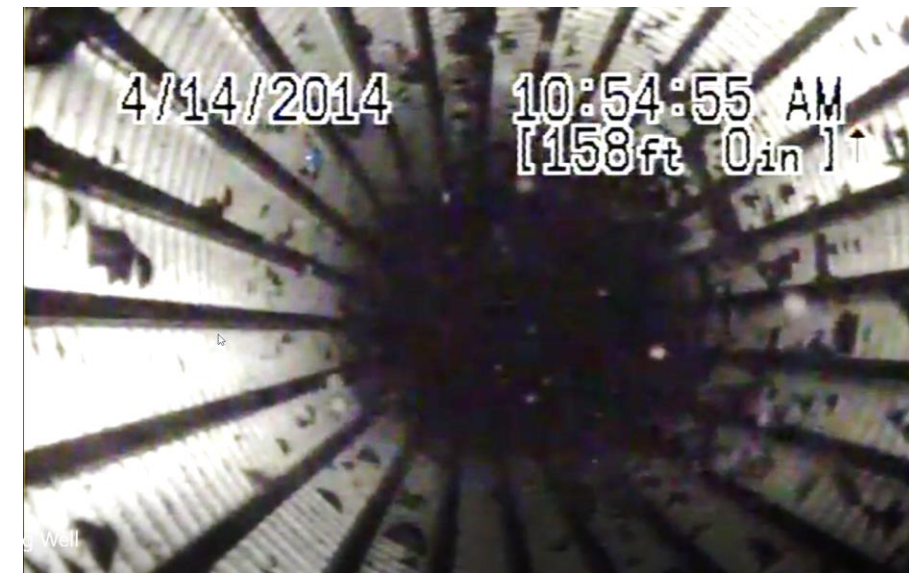
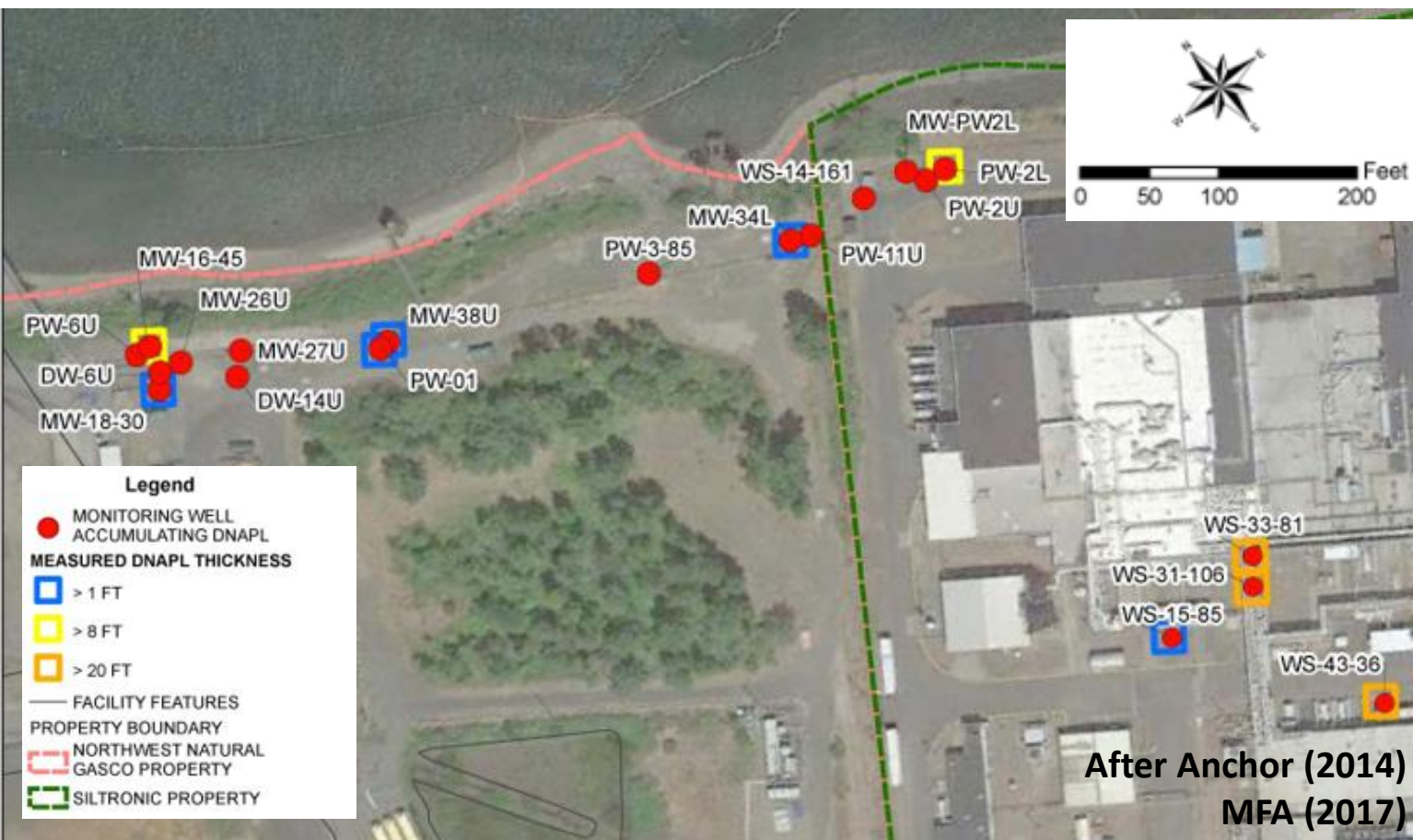


Extensive DNAPL Along Shoreline



- DNAPL detected in monitoring wells located along Willamette River shoreline
- Observed DNAPL is widespread – occurring over 1,000 feet of the shoreline
- No evidence to indicate DNAPL is stable:
 - Evidence of *mobile* DNAPL
 - Large vertical thicknesses
 - Dipping strata

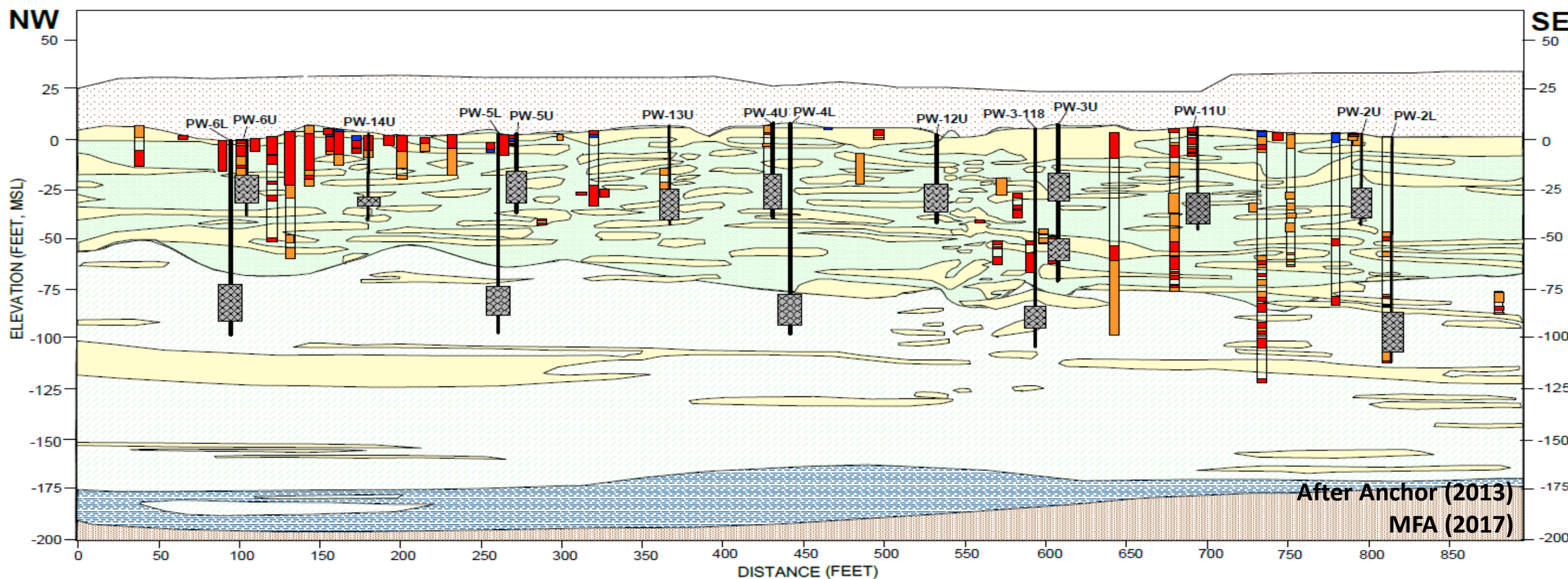
Observed On-Shore *Mobile* DNAPL



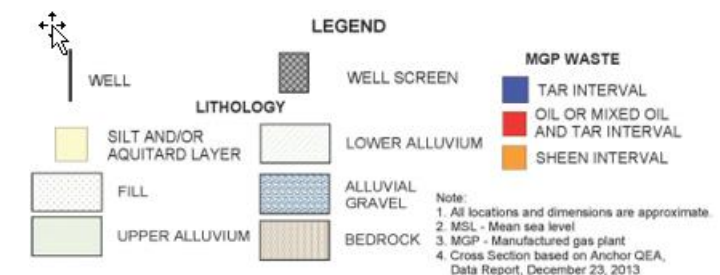
**DNAPL Entering Monitoring Well
WS-14-161 at 158 ft bgs**

- Mobile DNAPL accumulating wells within 100 feet of the channel
- DNAPL accumulations occur throughout shoreline profile - from 20 to 160 feet bgs
- DNAPL thickness: > 8 feet along shoreline; > 20 feet inland
- Rates of accumulation equivalent to $V_{\text{DNAPL}} = 10\text{'s of ft/yr}$

DNAPL Movement Through / Along Aquitard Lenses

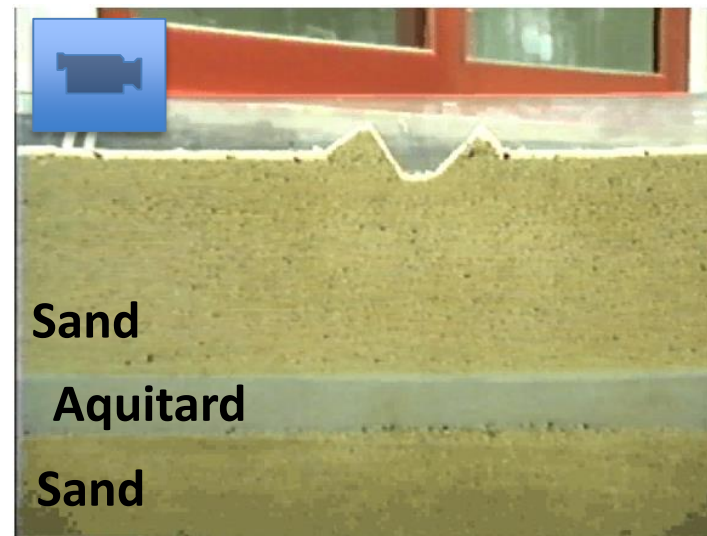


- DNAPL present above, within, and below stratified alluvium
- Orientation of silt aquitard lenses induces northeast migration
- Lenses dip toward river – 0.1 to 0.3 ft/ft

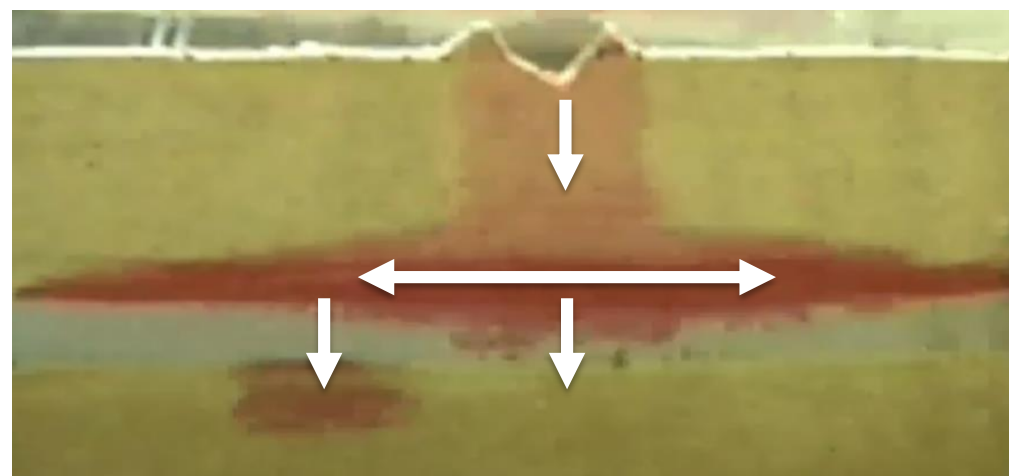
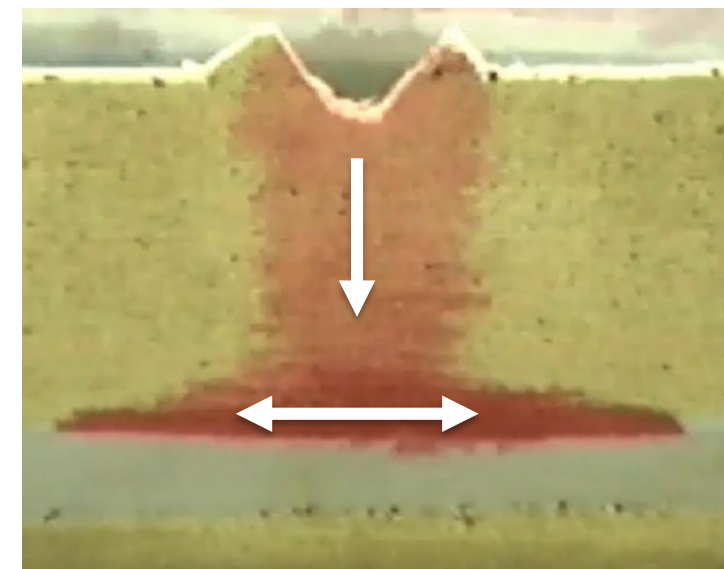
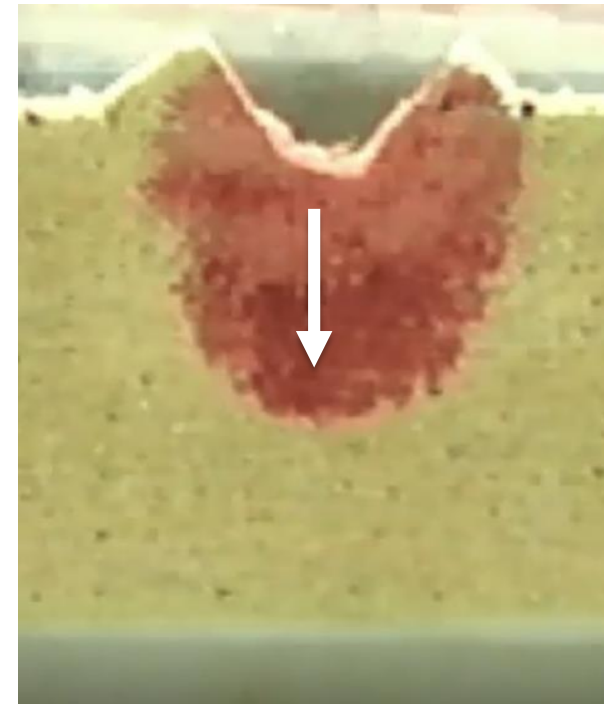


DNAPL Migration: Mechanics

- DNAPL migration is interrupted by aquitard lenses that inhibit vertical flow
- The aquitard produces an accumulation of DNAPL
- Breakthrough results when thickness exceeds capillary pore pressure of the aquitard
- As head increases, potential for lateral movement on dipping lenses increases



US EPA Kerr Laboratory: DNAPL Infiltration



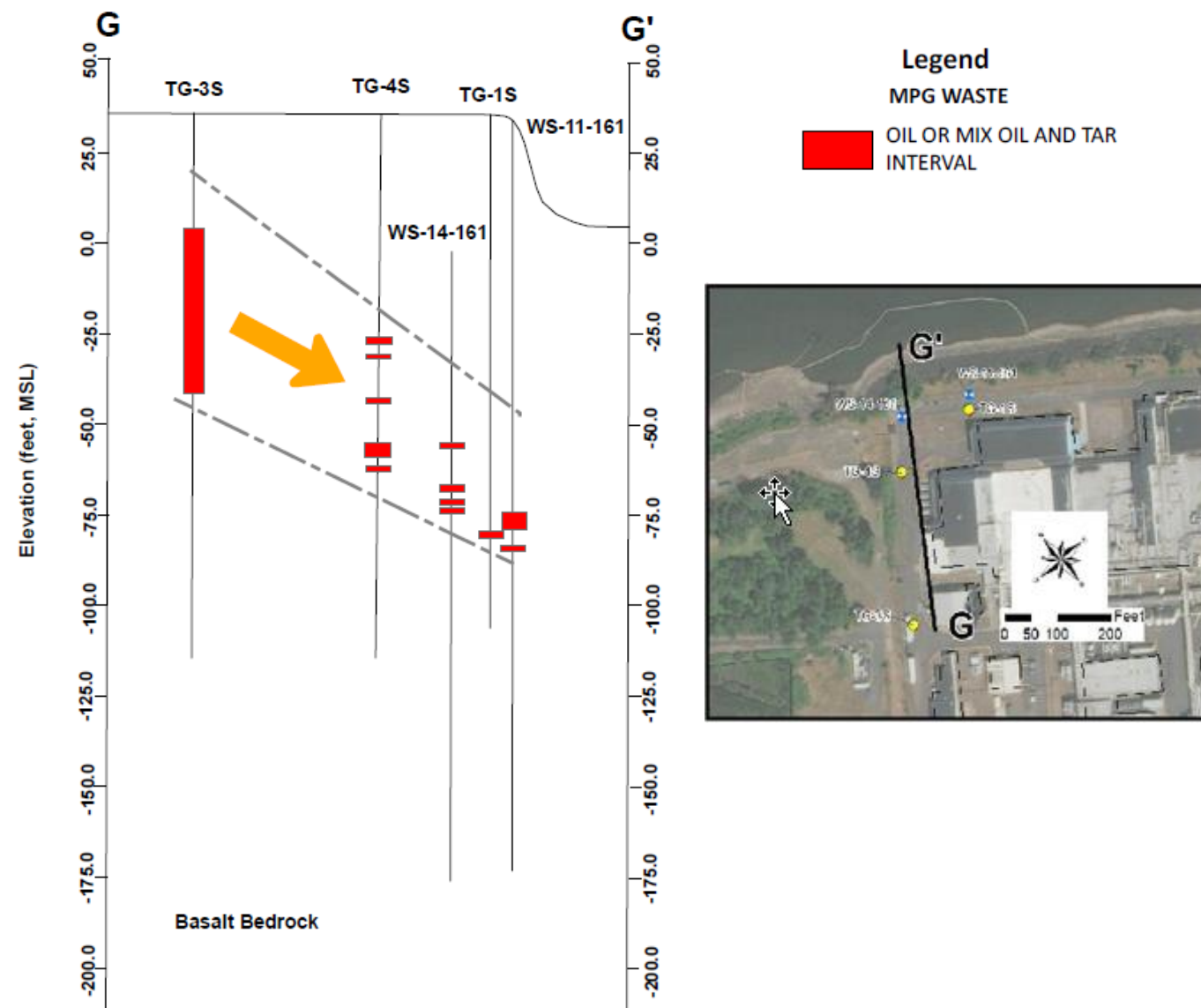
$$Zn = (2\sigma \cos\theta) / r g (\rho_o - \rho_w)$$

(σ = interfacial tension, θ =contact angle, g = gravity, ρ_o = NAPL density, ρ_w = water density)

(Cohen and Mercer, 2000)

DNAPL Lateral Movement Along Aquitard Lenses

- MGP waste shown to increase in depth with lateral NE migration
- DNAPL migration (slope) consistent with orientation of aquitard lenses
- Orientation of aquitard lenses problematic with hydraulic control of DNAPL



• AFTER ANCHOR 2007b, FIGURE 5

CSM: DNAPL Migration at Other MGP Sites

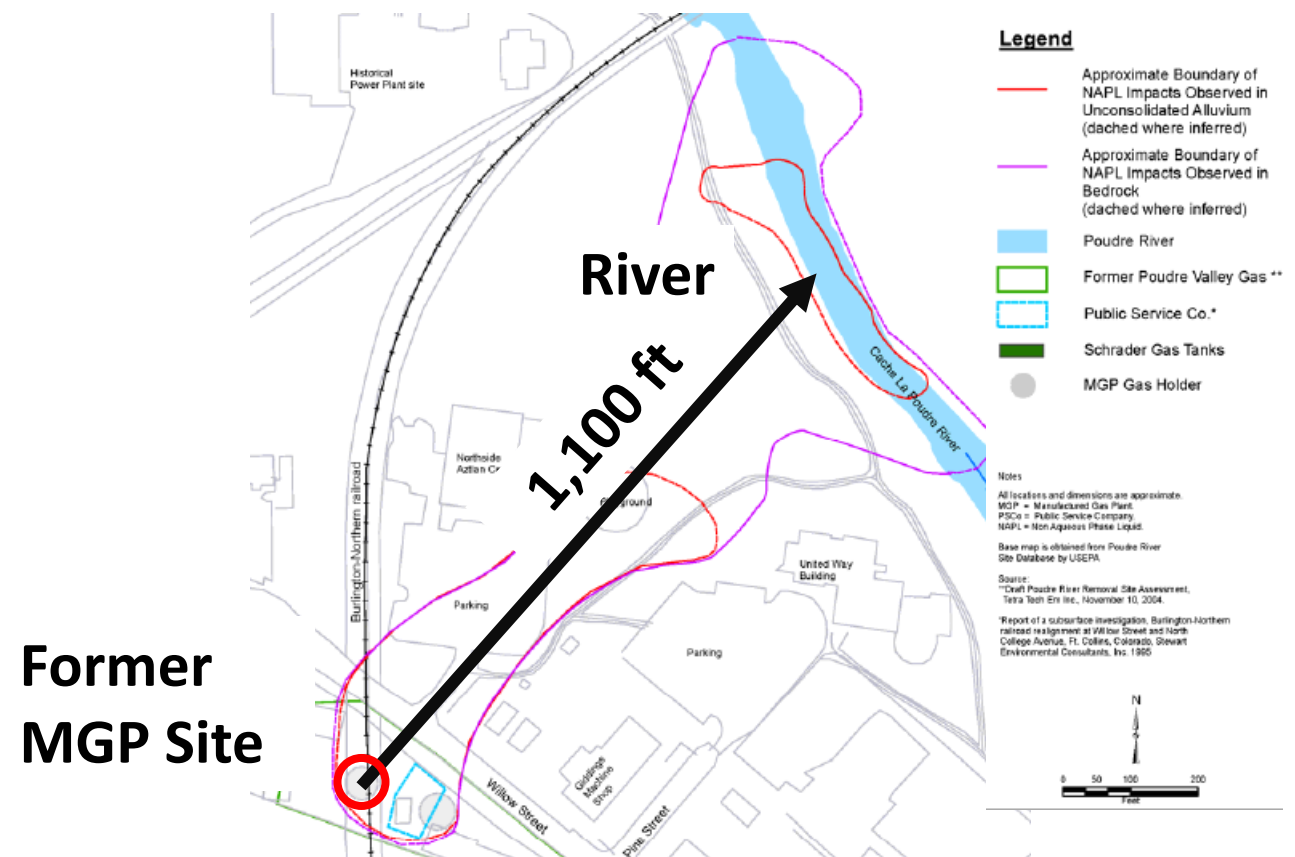
- Lateral DNAPL (coal tar) migration can occur over long distances
- Numerous characterization programs have documented coal tar movement of over 500 feet

- Poudre River, CO: 1,100 ft
- Kenosha, WI: 600 ft
- Buffalo, NY: 800 ft
- Tonawanda, NY: 700 ft
- Utica, NY: 1,000 ft

DNAPL Tar Ball at Base of Channel



Coal Tar Seep observed from river excavation



HC&C Ineffective Containment Strategy



- HC&C actively pumps groundwater at the shoreline
- Conceptually designed to reverse gradient from off-shore
- Well screens at discrete depths
- System not designed for DNAPL
- Hydraulic and chemical data document system is ineffective

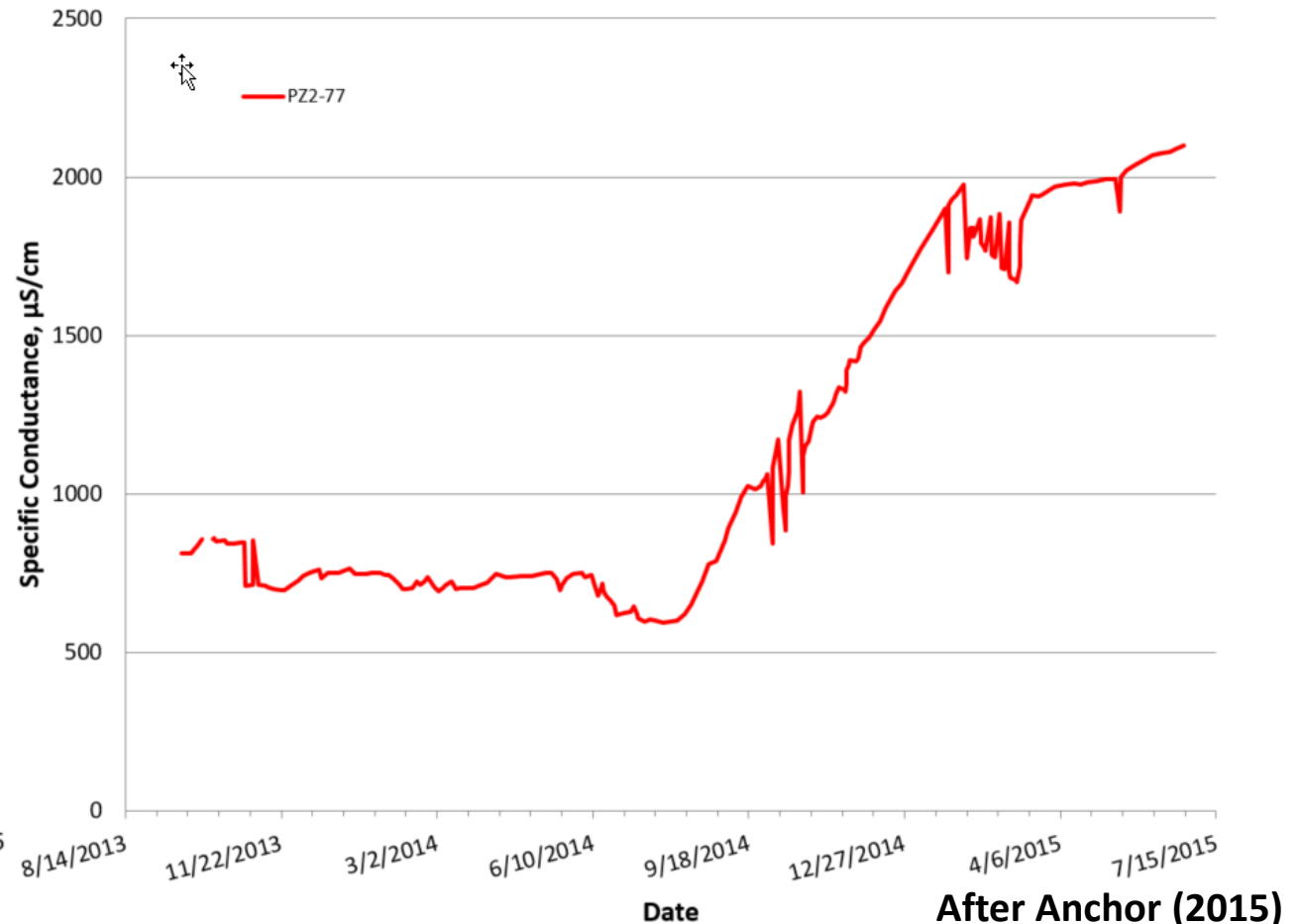
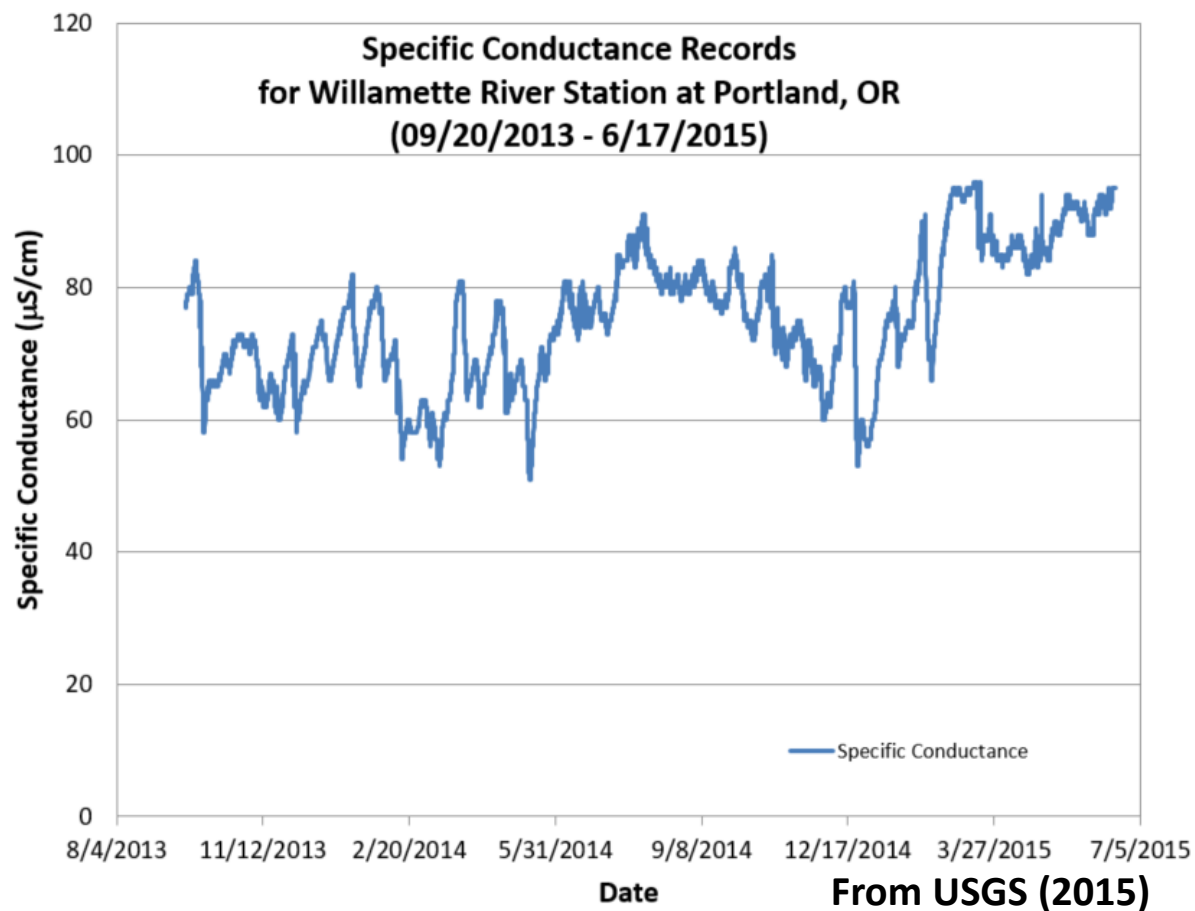
HC&C Ineffective Containment Strategy



Physical / Chemical Data that indicate HC&C is Ineffective at Containing / Capturing DNAPL Mass

- Specific conductivity data from river wells document groundwater discharge at all depths along channel
- Pump test data indicate insufficient change in hydraulic gradient
- Gradient of bedding exceeds any potential for hydraulic control
- Silt lenses inhibit capture of impacted groundwater and DNAPL

Specific Conductivity

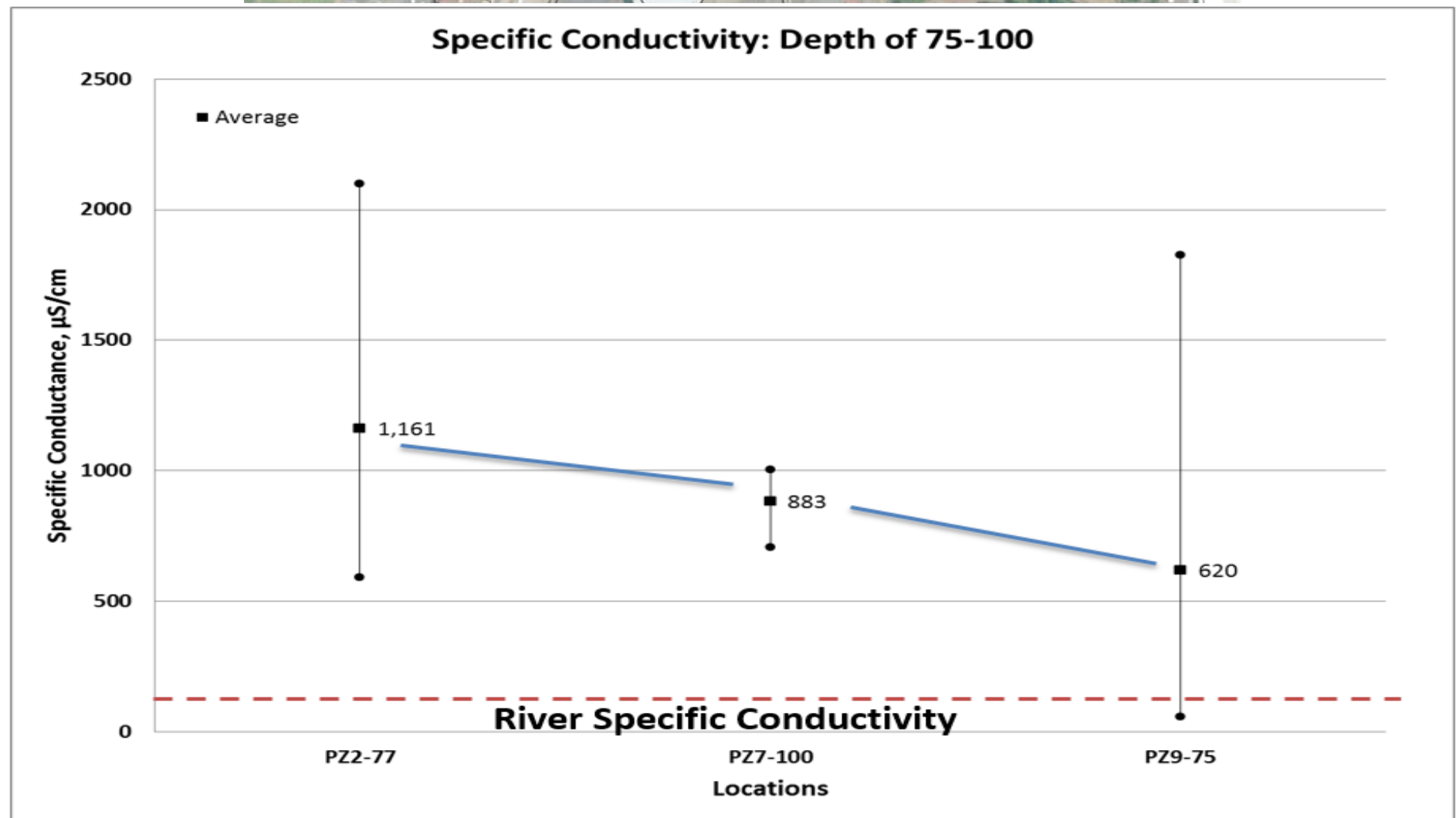


- Willamette River specific conductivity is low, less than $100 \mu\text{S}/\text{cm}$
- Specific conductivity in river wells is elevated
- Conductivity increases through time indicative of groundwater discharge and migration

Specific Conductivity



After Anchor (2015)



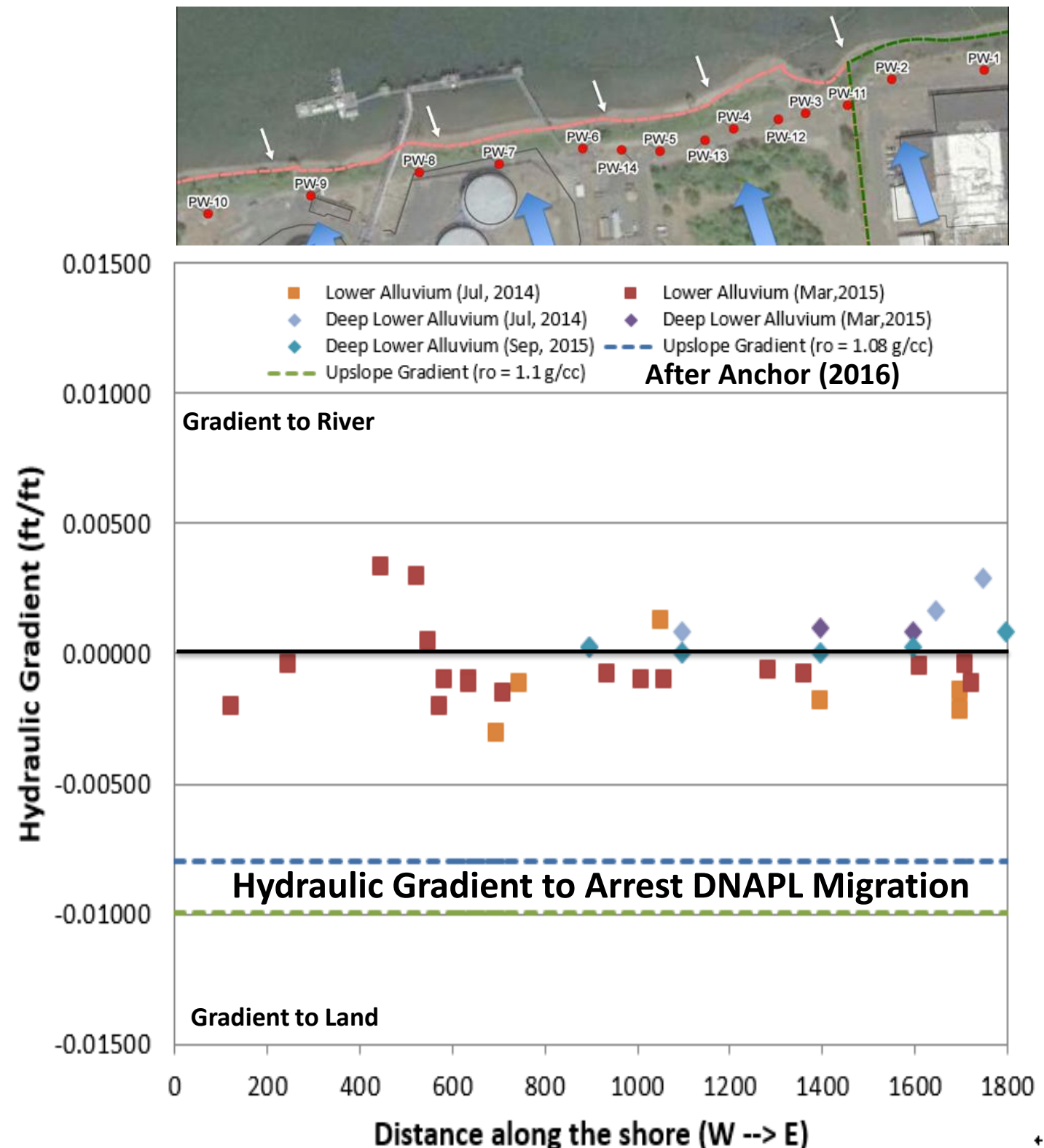
- Well data indicate groundwater discharge *into* river

HC&C: Gradient

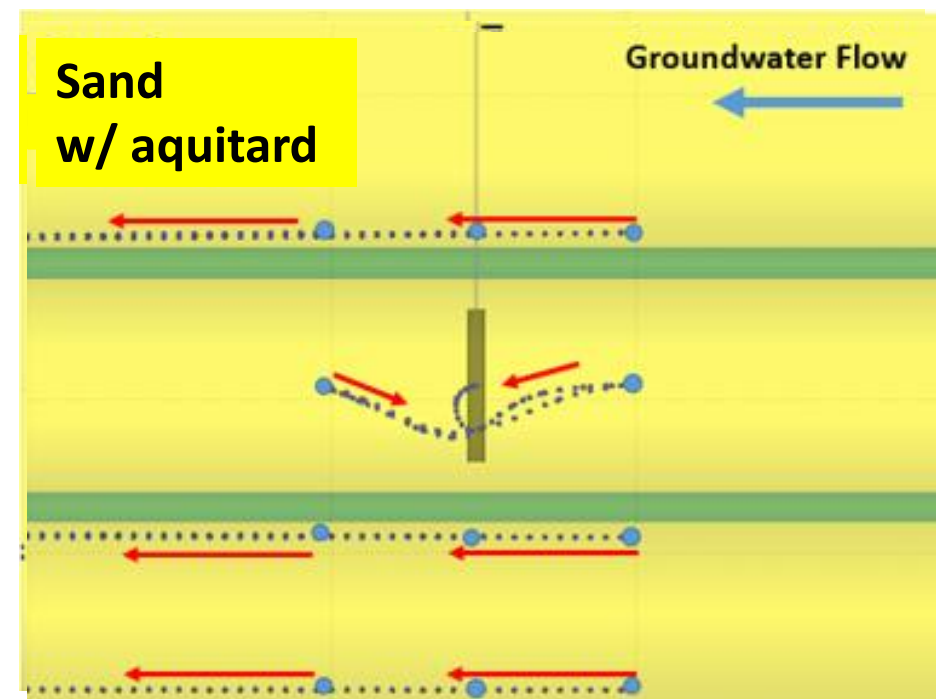
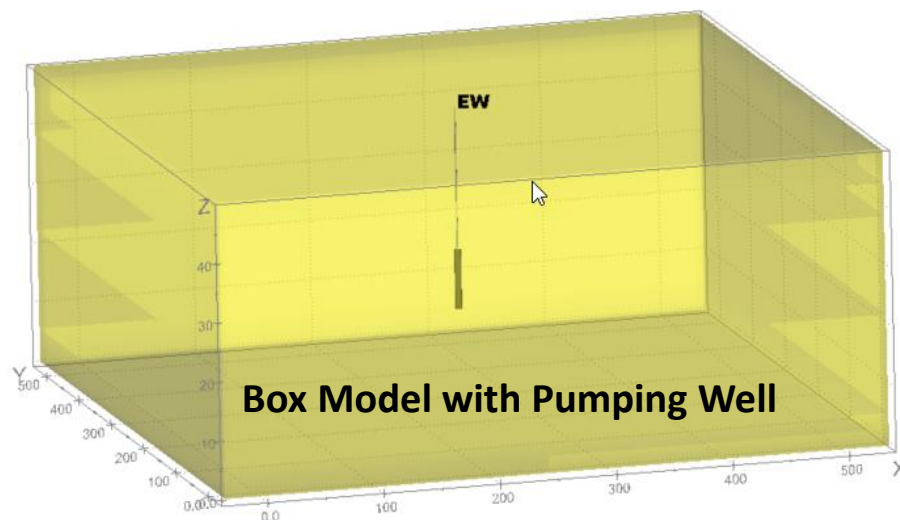
- Minimal change in gradient in response to HC&C operation
- Change in gradient due to pumping generally <0.001
- HC&C hydraulic gradient too low to arrest DNAPL movement on dipping aquitard lenses
- No data to support HC&C containment of DNAPL

$$i_h = [(\rho_n - \rho_w) \sin \theta] / \rho_w$$

Cohen and Mercer (2002)

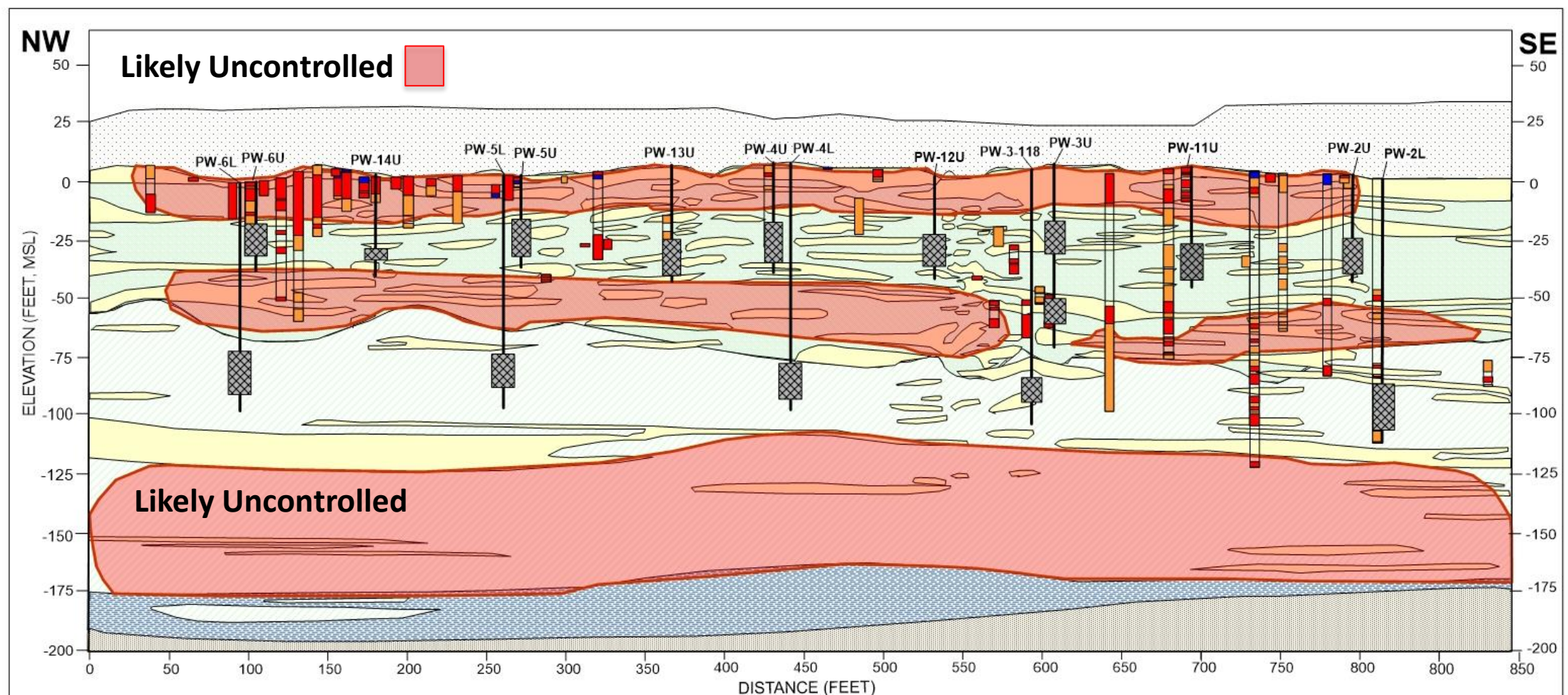


HC&C: Simulation of HC&C Pumping



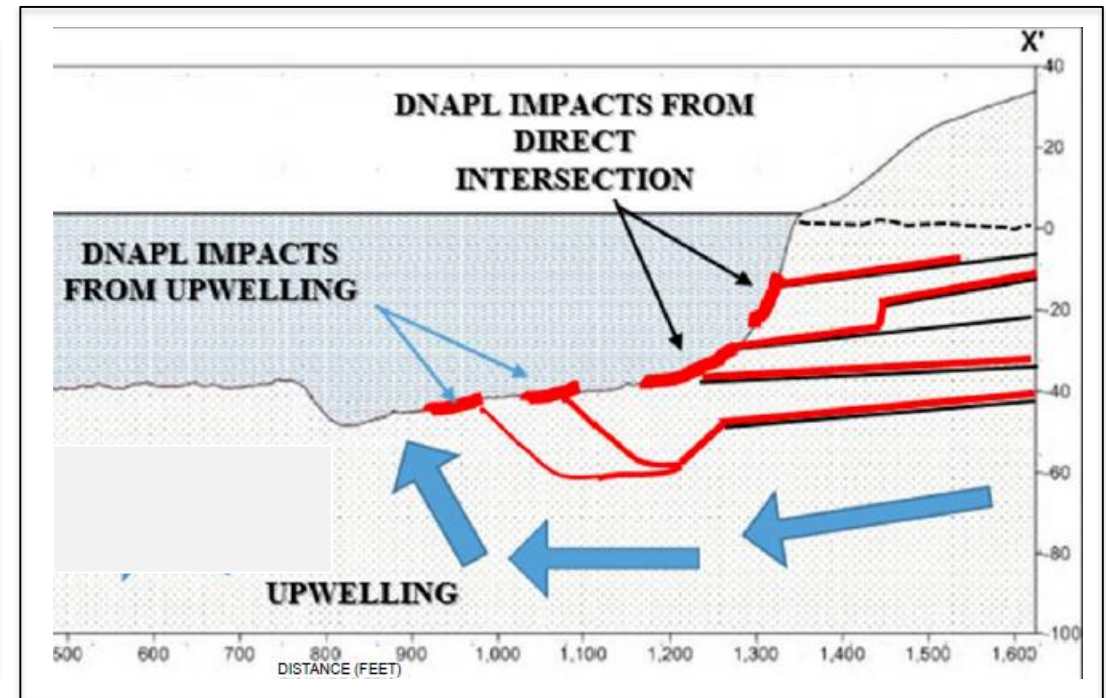
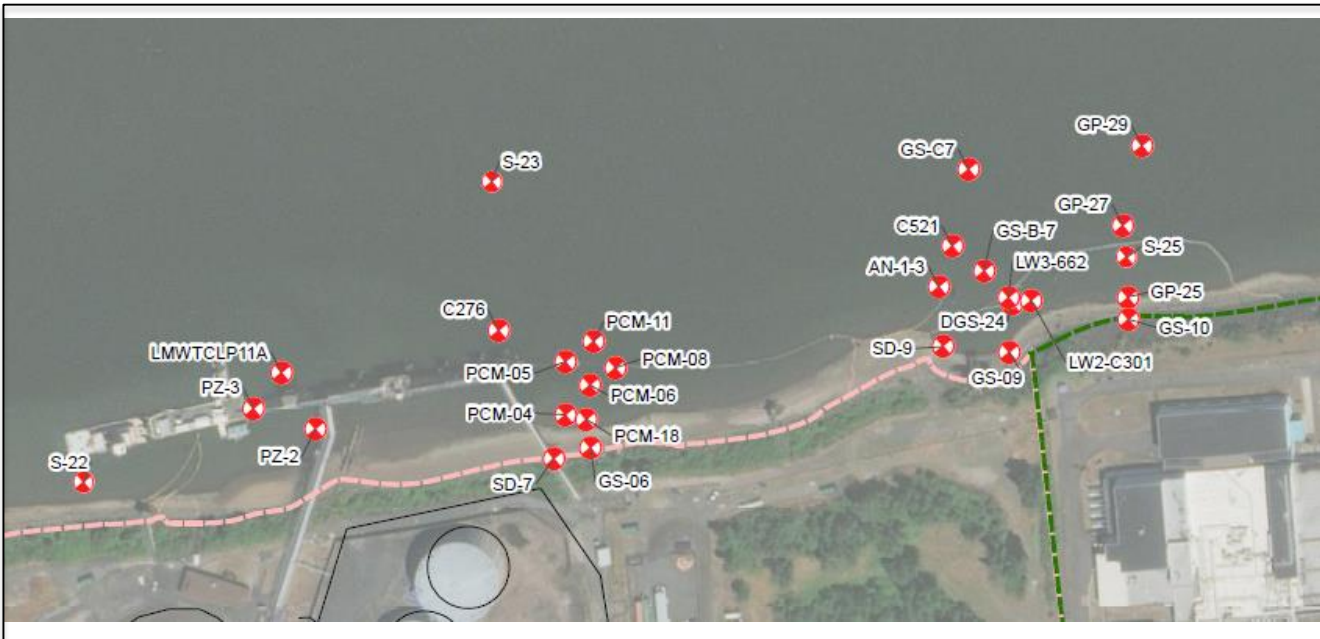
- Numerical modeling using MODFLOW documents the hydraulic importance of aquitard lenses
- Vertical capture is “controlled” by location of aquitards relative to well screen
- Containment occurs only proximal to pumping well screen

HC&C Ineffective Containment Strategy



- Large areas of the alluvial units are likely uncontained by HC&C pumping
- HC&C system induces DNAPL flow toward shoreline
- HC&C capture mitigated by aquitard lenses
- DNAPL migration neither stabilized nor captured

Summary





- Conclusions
 - No evidence to indicate containment of DNAPL
 - DNAPL migration into river enhanced by
 - NE dipping strata
 - HC&C system
 - Abundant source
- Areas Requiring Focus
 - Re-evaluation of site data
 - Refined understanding of transport mechanics
 - Refined evaluation of HC&C pumping effects

Evaluation of Stormwater

Status of Source Control at NW Natural

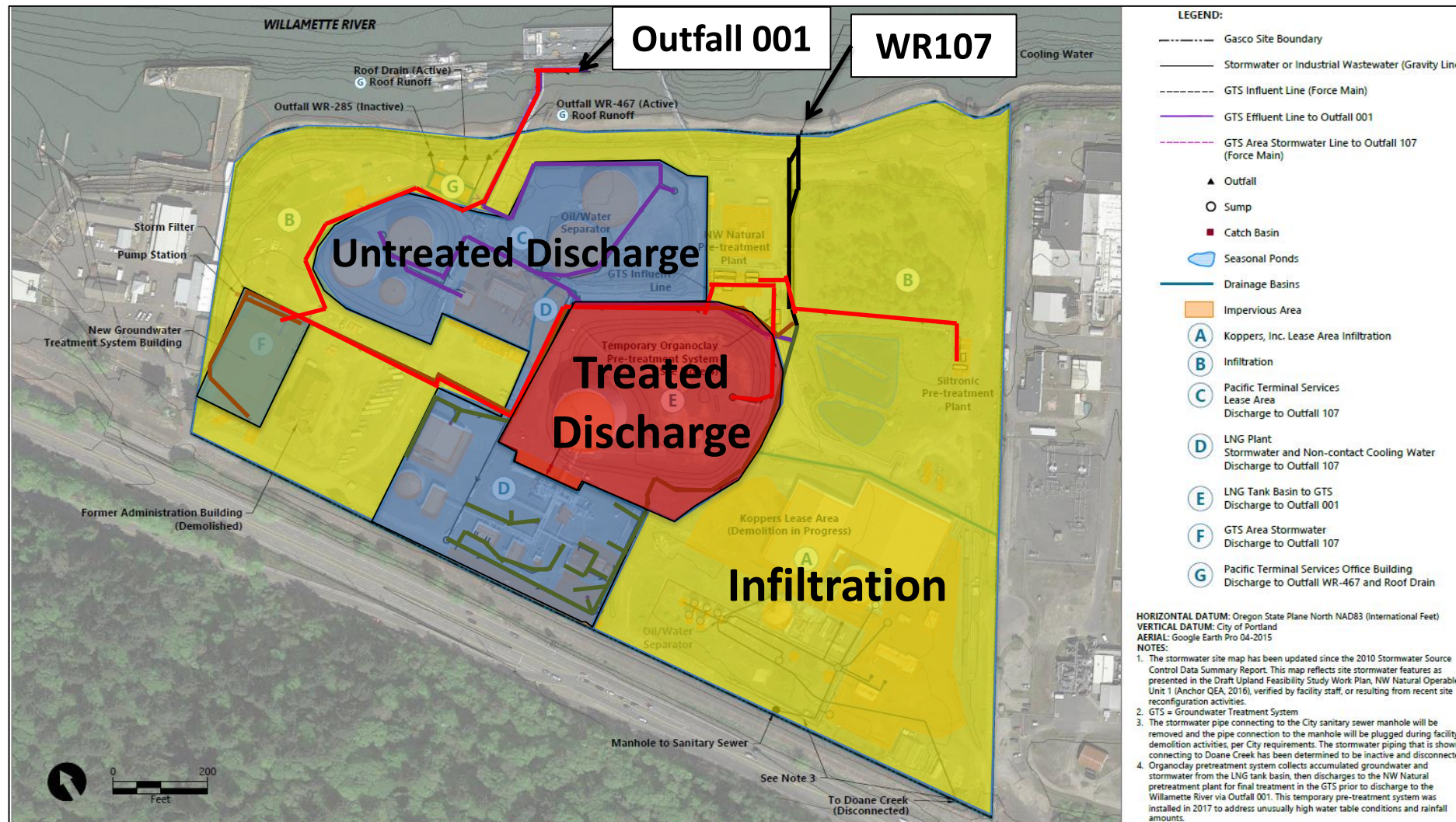
From: DEQ (2016) Portland Harbor Upland Source Control Summary Report

 <p>Portland Harbor Upland Source Control Summary Report November 21, 2014 - Updated March 25, 2016</p> <p>Northwest Region Cleanup Program 100 NE Multnomah Street Portland, OR 97232 Phone: 503-226-5263 800-452-6011 Fax: 503-226-4762 Email: alex.livemore@deq.or.gov www.deq.or.gov</p> <p>DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.</p> 	Site	ECSI#	Pathway(s)	Priority	Source Control Measures Status/ Dates	Decision Document	Recontamination Potential
	NW Natural - "Gasco" Site	84	Overland flow	Low	SCMs needed – integrate w/in-water – Uncontrolled	SCD anticipated 2020	High until in-water & fill portion upland remedies implemented
			Bank erosion	High	SCMs needed – integrate w/in-water – Uncontrolled		
			Groundwater	High	Alluvium portion containment 2015 - effectiveness pending - Fill portion - Uncontrolled		
			Stormwater	Low	Evaluation underway - Uncontrolled		
			Overwater acts	Low	Spill plan & BMPs		

- ODEQ (2016) *Upland Source Control Summary Report* acknowledges the uncontrolled nature of multiple contaminant transport pathways at NW Natural
- These uncontrolled sources have a high potential for sediment recontamination

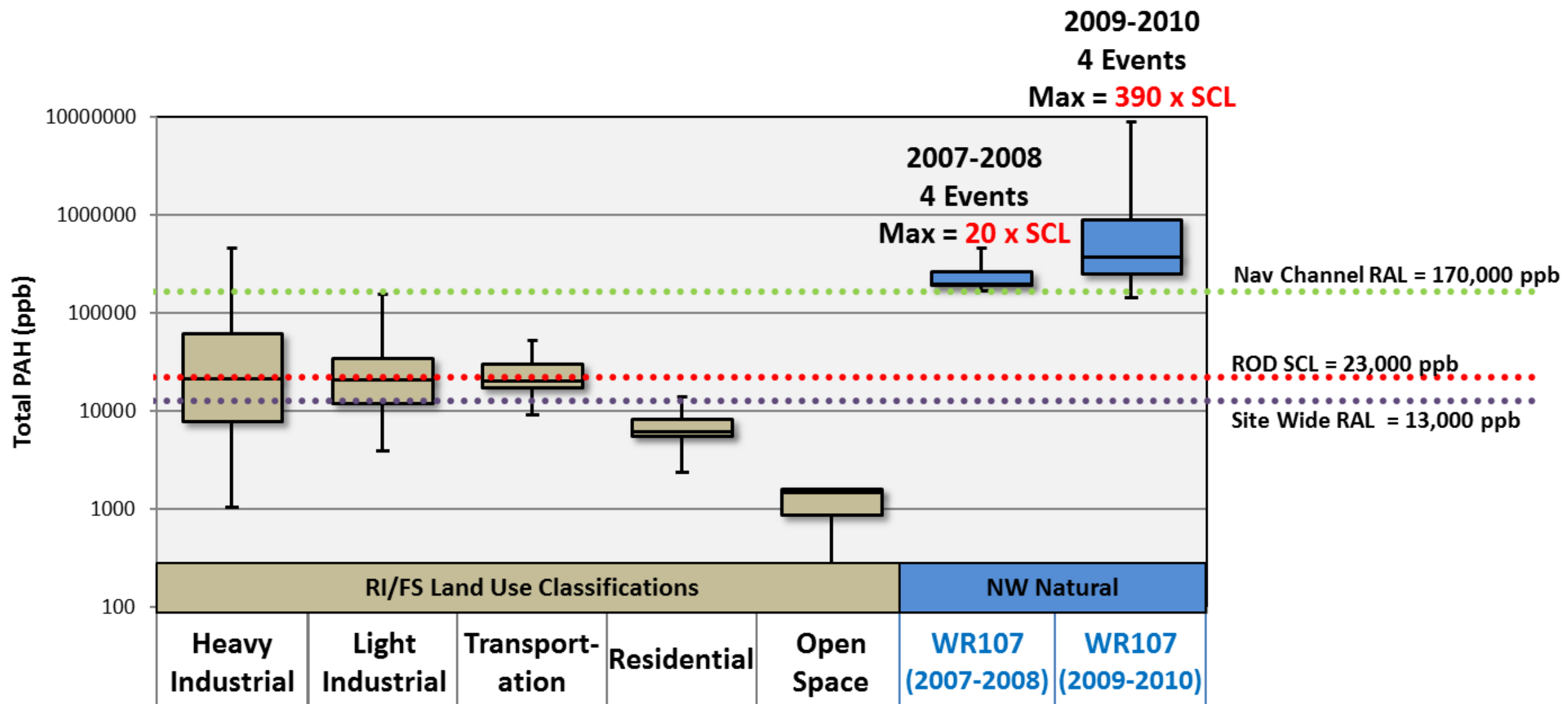
NW Natural Stormwater Fate

From: AQEA (2017) Stormwater Source Control Evaluation Report



- Recent documents provide updated fate of stormwater
- Stormwater that doesn't infiltrate is either treated prior to discharge (Outfall 001) or discharged without treatment (WR107)

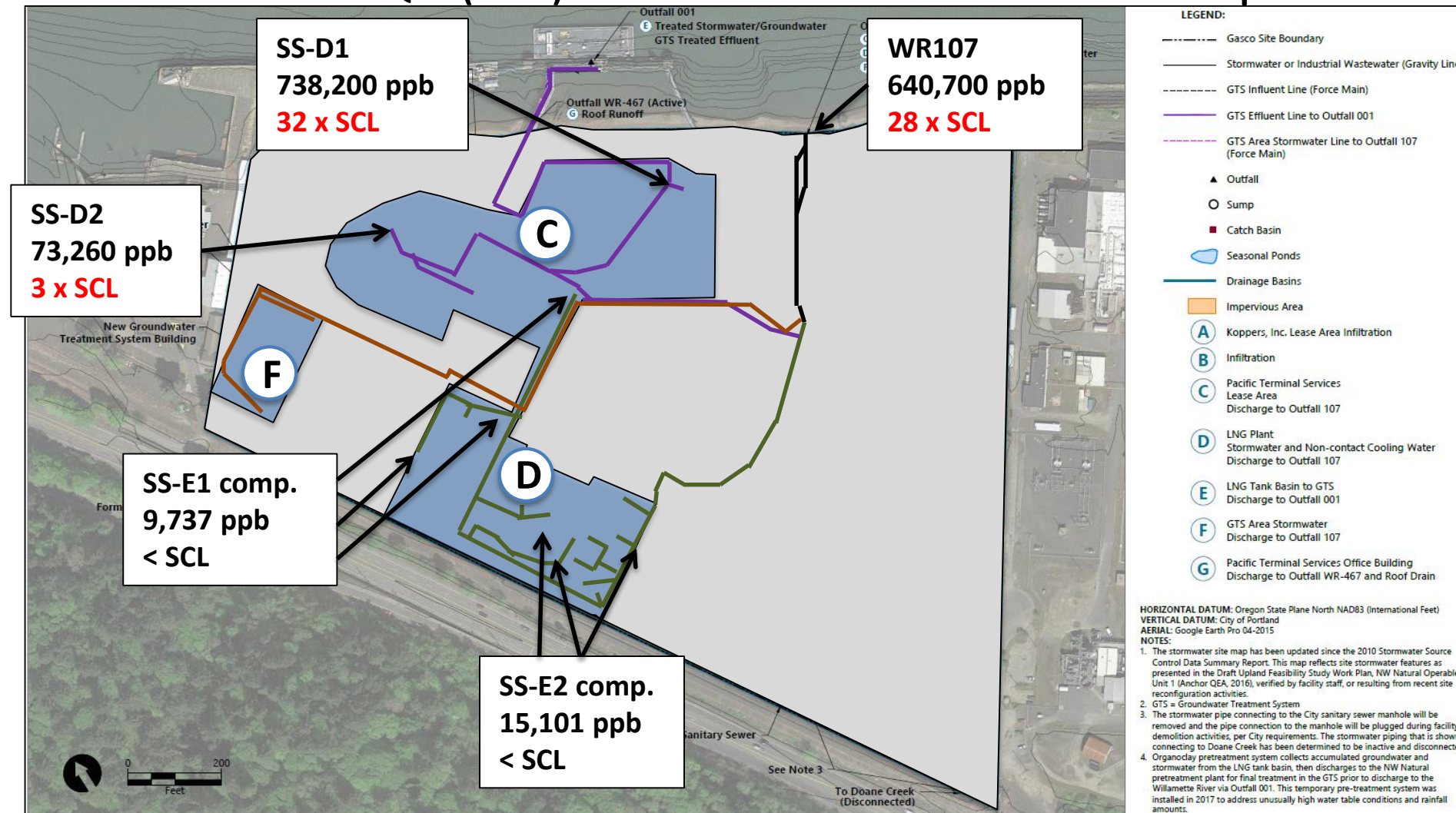
PAHs in Stormwater Solids



- Whole water PAH concentrations can be compared to cleanup levels by normalizing to TSS concentration
- PAHs in NW Natural stormwater are highest for all of Portland Harbor

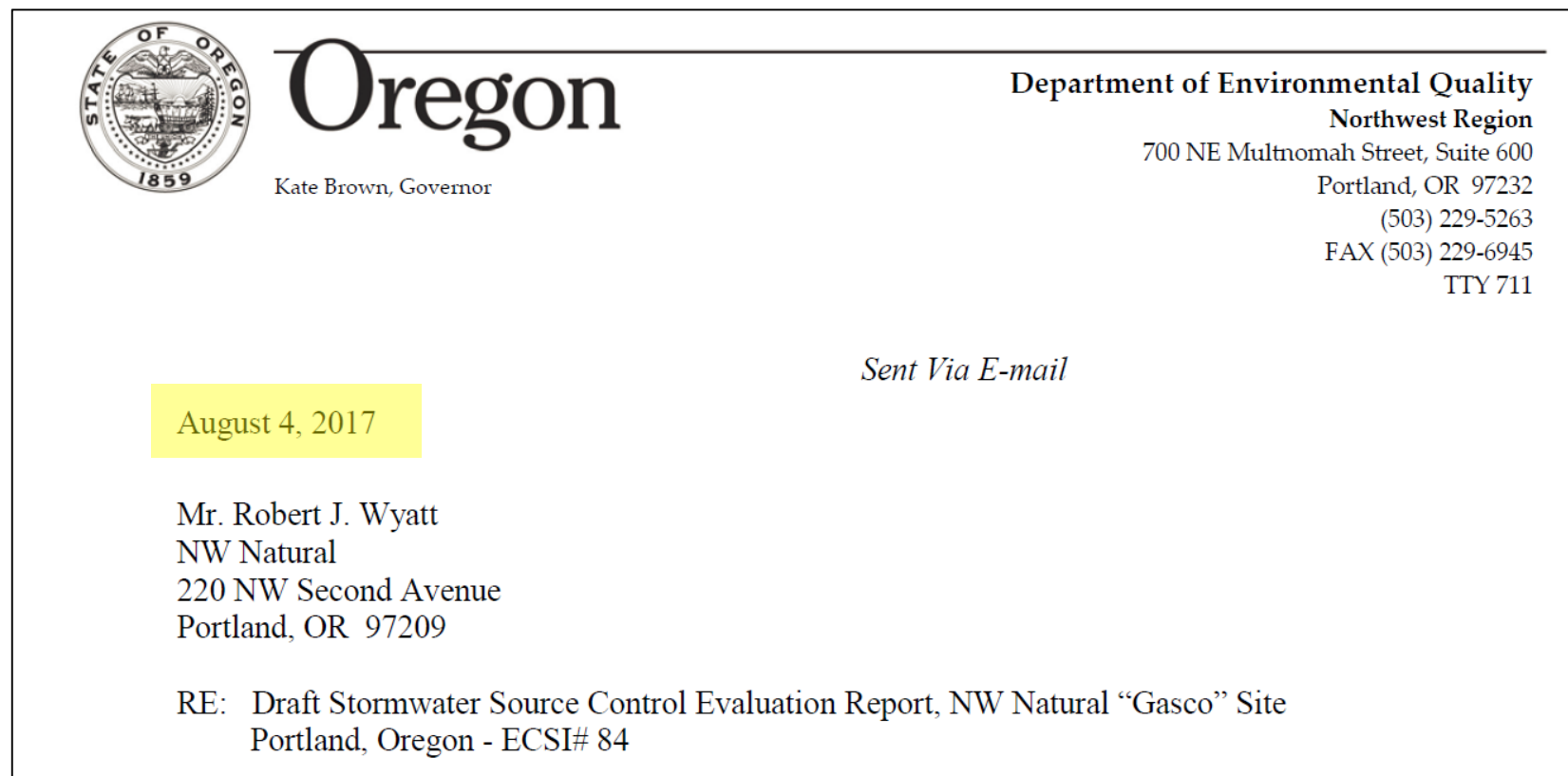
PAHs in Sediment Traps and Catch Basins

From: AQEA (2017) Stormwater Source Control Evaluation Report



- The only NW Natural sediment trap/catch basin data is from 2007
- Solids exceeded cleanup level within Basin C and at outfall WR107

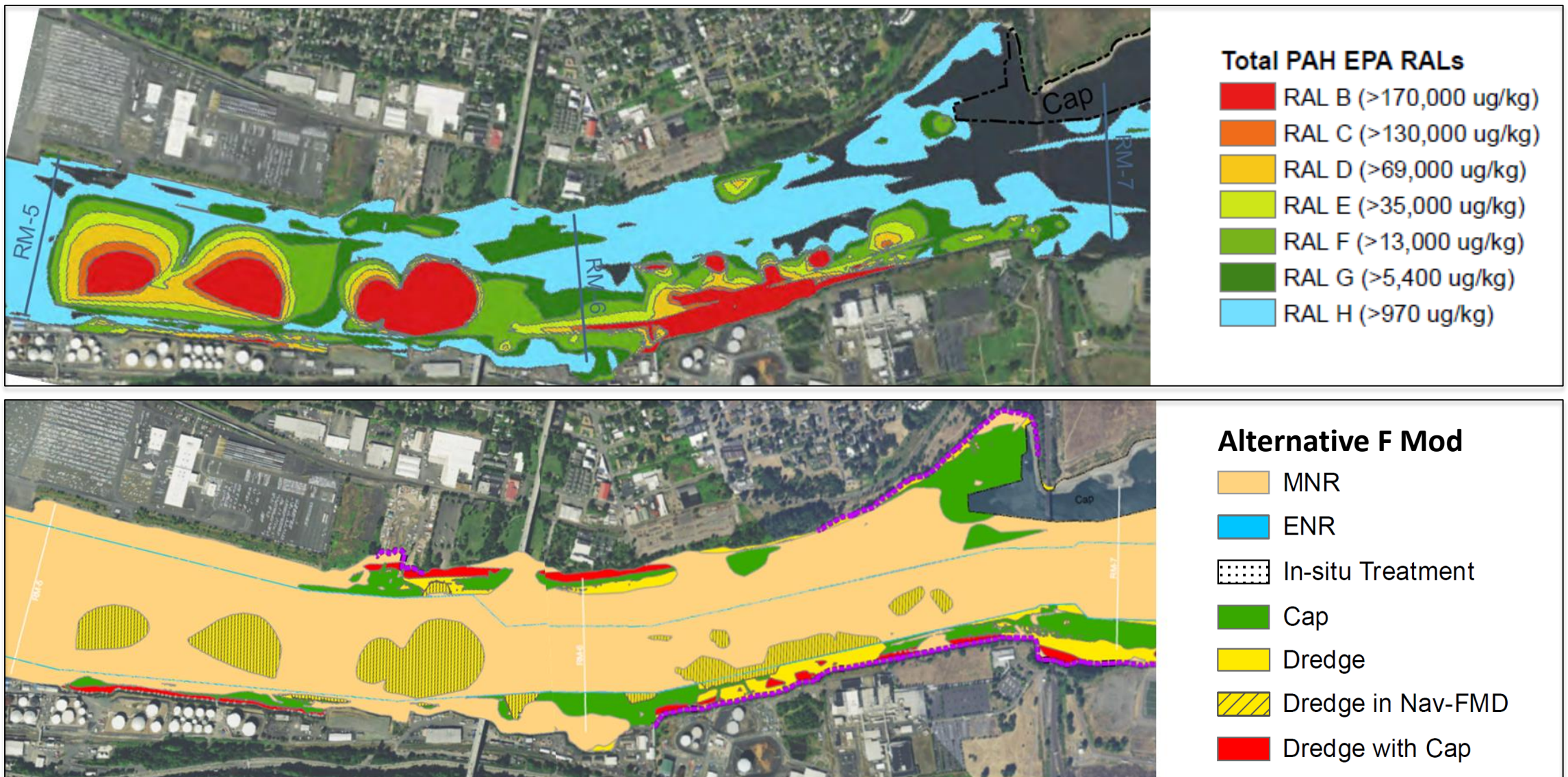
Recent requests by DEQ



Based on our review of the information presented in the Draft SCE, DEQ concludes:

- Source control measures, whether permanent or interim, are needed in basins C and D, as well as to prevent uncontrolled overland runoff along the shoreline and other ponding areas of the site, which may contribute to direct discharges to the river during saturated winter conditions.
- Following evaluation and selection of acceptable site-wide stormwater control measures, an effectiveness demonstration plan must be developed and implemented. DEQ anticipates the plan will include additional observations and sampling and analysis to evaluate performance.

Implications for In-water Remedy



- Selected Remedy for RM 5 - 6.5 is driven by PAHs
- Remedy success requires source control at the NW Natural site

Stormwater Summary

- In-river remedy success between RM 7 - 4 requires upland PAH source control at NW Natural
- Stormwater chemical concentration and loading data is very limited and outdated
- Available data indicate NW Natural stormwater is an ongoing and potentially significant PAH source to Willamette River sediments
- A modest stormwater sampling and analysis program is needed to assess significance of the source and evaluate performance of source control measures